Brain

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1. On Some of the Nervous Complications of the Specific Fevers. Sir Thomas Barlow.
2. The Development of the Vertebrate Nerve Cell: A Cytological Study of the Neuroblast Nucleus. John Cameron.
3. Miner's Nystagmus. A. Christie Reid.

1. *Nervous Complications of Specific Fevers.*—This is pre-eminently a clinical paper, and one, though discursive, filled with much wealth of experience. Speaking of diphtheritic neuritis, Barlow reports instances of similar nature occurring after measles. Acute ascending paralysis due to measles he also reports, as well as hemiplagic and disseminated sclerosis syndrome pictures. The specific infectious organism in anterior poliomyelitis is unknown. Barlow suggests that there is little doubt that measles, scarlet fever, typhoid and even chicken pox are to be reckoned with. Disseminated encephalomyelitis as a complication of the specific fevers is mentioned and stress laid upon transverse myelitis in the same connection. Multiple neuritis and hemiplegia are also discussed as secondary to the infectious fevers.

2. *Development of Vertebrate Nerve Cell.*—An extensive and detailed embryological paper copiously illustrated, from which the author's summary may be quoted in full: (1) The scanty cytoplastic investment which the neuroblasts possess during the early development stages takes little part in producing the abundant cytoplasm of adult nerve cells. (2) The latter is to be regarded partly as a product of the metabolic activity of the neuroblastnuclei during metabolic life. (3) One of the earliest indications of this metabolic activity is shown in the lower vertebrates (*e. g.*, fishes and amphibians) by an ingestion of yolk particles at one definite pole of the nuclear wall. For this the title of assimilative pole has been adopted. (4) The ingested yolk is elaborated within the nucleus and stored up as chromatic material which first shows near this pole. (5) The ingestion of the yolk is further evidenced by a progressive increase in the size of the nuclei, which occurs during the period when the absorptive process is going on. (6) The rudiment of the axis-cylinder process arises in the form of successive extrusions of nuclear achromatic substance from the assimilative pole of the neuroblast nucleus. This pole thus becomes the axon pole. (7) It is to be clearly understood that the term achromatic is applied throughout to a fluid substance which is nuclear in origin, and is in the nascent condition strongly resistent to the action of all coloring agents. This term is therefore applied in contradistinction to the chromatic or staining elements of the nucleus. It is possible that several distinct substances may be included under this title of achromatin; but from its very nature it has as yet defied attempts at learning its composition by means of microchemistry. (8) The assimilative or axon pole of the neuroblast nucleus has always a definite direction. Thus it looks towards the ventricular cavity in the cerebral hemispheres, and forwards as well as outwards in the anterior cornua of the spinal cord. (9) Not only the axon rudiment, but also a great part of the cytoplasm of the future nerve cell is produced from the neuroblast nucleus, owing to the continued exercise of the achromatin function. (10) The nuclear metabolic product is extruded mainly from the axon pole. This would account both for its gradual accumulation in this region and also for the eccentric position of the nucleus in the embryonic nerve cell. (11) The material which is

given off from the neuroblast nucleus is achromatic only in the nascent condition. It very soon, however, undergoes a characteristic process of rechromatization which affects the extruded perinuclear substance in a definite manner and gives rise to the neuro-fibrillary network and the Nissl bodies. (12) The neuroblast nuclei exhibit structural changes as evidence of their metabolic activity. The most striking is a disappearance of the accumulated chromatic material from the axon pole, which occurs during the period that the axon rudiment is being given off. The chromatic element is thus re-transformed into nascent achromatic element, in which condition it is discharged from the nucleus. (13) In some regions, the retina, cerebral hemispheres and ganglion habenulae, of lower vertebrates, the neuroblasts exhibit in addition a marked reduction in size during the period that this achromatic element is being discharged. (14) Three types of neuroblasts may be recognized. For these the names of A. B., and V-neuroblasts have been adopted. (15) The a-neuroblasts retain their embryonic character more or less. They probably form a reserve of young nerve cells. (16) The b-neuroblasts become invested by a very scanty envelope, their process thus appearing to pass directly from the nuclei. (17) The v-neuroblasts become transformed into actively functioning nerve cells, and become endowed with an abundant investment which forms the adult cell-cytoplasm. (18) It is important to note that the nerve cells begin their life history as an a-type of neuroblast, and pass successively through the b and v-types. (19) Several observers have shown that the cytoplasm of nerve cells is rich in nuclein compounds. This seems to suggest that a part of it at least is derived from the nucleus as shown in this research. (20) The nucleus not only gives part origin to the protoplasm of the nerve cell, but also furnishes a fresh supply of material to replenish the latter, when occasion demands, throughout the life history of the individual. The nucleus is thus the nutritive center for the nerve cell. (21) It is thus obvious that a modification in our present acceptation of the Wallerian law of degeneration will be necessary. The latter ought therefore to read somewhat as follows: An axon when cut off from its nutritive center, the nucleus of the nerve cell, soon exhibits degenerative changes.

3. *Miner's Nystagmus.*—The author puts forward a new hypothesis to account for this disturbance. He terms it the equilibration disturbance theory. His conclusions may be summarized as follows: The etiology is complex, the factors of most importance are (1) Conditions tending to do away with yellow spot fixation; *e. g.*, feeble light; (2) Conditions tending to disturb the equilibrium of the body; (3) Conditions in which some more or less rythmical series of movements is performed by the head and body, the eyes remaining fixed; (4) The onset is hastened by debilitating influences; *i. e.*, alcoholism, influenza, accident. JELLIFFE.